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Claims

1. A method of managing ring-back sounds in a subscriber-based ring-back sound service, comprising:

5 the first step of storing common ring-back sounds and reporting details of use of the common ring-back sounds to a ring-back sound management server, in each of Intellectual Peripherals (IPs);

the second step of storing individual ring-back sounds and reporting details of use of the individual ring-back sounds to the ring-back sound management server, in each of large capacity storage devices connecting and interworking with one or more IPs; and

10 the third step of statistically compiling the reported details of use of the common and individual ring-back sounds and determining whether to maintain storage of the common and individual ring-back sounds based up the statistically complied details, in the ring-back sound management server.

15 2. The method as set forth in claim 1, further comprising the step of requesting the IP or large capacity storage device to delete a ring-back sound determined at the third step so that the ring-back sound is deleted, after the third step.

20 3. The method as set forth in claim 1, further comprising the step of requesting the IP to remove a ring-back sound determined at the third step so that the ring-back sound is removed from the IP to the large capacity storage device, after the third step.

25 4. The method as set forth in claim 1, wherein the IPs each search for a corresponding ring-back sound in the large capacity storage devices and transmit the searched corresponding ring-back sound, if there is no corresponding ring-back sound to be provided to an originator during call establishment between the originator and a terminator.

30 5. An apparatus for managing ring-back sounds in a subscriber-based ring-back sound service system, the subscriber-based ring-back sound service system having ring-back sound provision means for storing a variety of ring-back sounds, connecting with Mobile Switching Centers (MSCs) of a mobile communications network via the gateway and providing the stored ring-back sounds to the MSCs; ring-back sound provision control means for communicating with the IP via the Internet

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and specifying a kind of a ring-back sound to be provided to the MSCs based upon a combination of identification of a terminating subscriber that a call connection is requested to reach, identification of an originator corresponding to the identification of the terminating subscriber, and information on a time band in which the request of the call connection is made; a Web server for connecting with the
5 ring-back sound provision means or ring-back sound provision control means via the Internet, and adding ring-back sounds to the ring-back sounds stored in the ring-back sound provision means or changing ring-back sound specifying information of the ring-back sound provision control means; a Home Location Register (HLR) for storing first information about whether to substitute for an existing ring-back tone and second information for performing routing to the ring-back sound provision means as profile information of a terminating subscriber; the MSCs for receiving and storing the established first and second information while communicating with the HLR at a time of registering a location of the terminating subscriber, receiving a ring-back sound while communicating with the ring-back sound provision means based upon the first and second information, and providing the received ring-back sound to the corresponding originator, instead of
10 the existing ring-back sound, comprising:
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ring-back sound provision means for storing common ring-back sounds;
large capacity storage devices each interworking with one or more ring-back sound provision means; and

ring-back sound management server for statistically compiling the reported details of use of the
20 common and individual ring-back sounds, determining whether to maintain storage of the common and individual ring-back sounds based up the statistically complied details, requesting the ring-back sound provision server or large capacity storage device to delete a determined ring-back sound so that the ring-back sound is deleted therefrom, and requesting the IP to remove a determined ring-back sound so that the ring-back sound is removed from the IP to the large capacity storage device.

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6. The apparatus as set forth in claim 5, wherein the IPs, the large capacity storage devices and the IP server communicate with each other based upon Transmission Control Protocol/Internet Protocol (TCP/IP).

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7. The apparatus as set forth in claim 5, wherein the IPs, the large capacity storage devices and the IP server communicate with each other based upon a Local Area Network (LAN).

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8. A method of presenting ring-back sounds in a subscriber-based ring-back sound service, the subscriber-based ring-back sound service being performed in such a way as to store a plurality of ring-back sounds corresponding to ring-back sound codes in ring-back sound provision means constructed to be linked to a mobile communications network, and provide originators with a ring-back sound corresponding to a ring-back sound code selected by a terminating subscriber with respect to each of originators, originator groups, originating time bands and default, comprising:

the first step of selecting a ring-back sound while communicating with a ring-back sound presentation server through one of Web data communication and WAP communication server by a presenter, and providing ring-back sound code information of the selected ring-back sound and subscriber information of a presentee to the ring-back sound provision means;

the second step of transmitting a message notifying ring-back sound presentation, including call-back information, to a mobile terminal of the presentee in a short message form via a Short Message Service (SMS) server of the mobile communications network based upon the subscriber information of the presentee; and

the third step of selecting the condition information while communicating with the ring-back sound presentation server according to the call-back information, and providing the selected condition information from the ring-back sound presentation server to the ring-back sound provision means.

9. The method as set forth in claim 8, wherein the ring-back sound provision means stores the provided ring-back sound information in an inactive storage space of a corresponding subscriber, activates the provided ring-back sound information according to the provided condition information, and uses the activated ring-back sound information as a substitute ring-back sound.

10. The method as set forth in claim 9, wherein the inactive storage space stores one or more ring-back sound codes, and causes a new ring-back sound to be overwritten on an oldest ring-back sound when having no available space.

11. The method as set forth in claim 9, wherein the inactivated ring-back sound codes stored in the inactive storage space are accessed and selectively activated through a wired or wireless

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Internet.

12. An apparatus for presenting ring-back sounds in a subscriber-based ring-back sound service, the subscriber-based ring-back sound service providing a ring-back sound selected by a terminating subscriber to originators, comprising:

5 a ring-back sound provision means constructed in conjunction with a mobile communications network to store a plurality of ring-back sounds corresponding to ring-back sound codes, and provide a ring-back sound corresponding to a ring-back sound code selected by a presenter according to condition information regarding originators, originator groups, originating time bands and default, instead of an existing ring-back tone;

10 a ring-back sound presentation means interworking with the ring-back sound provision means via the Internet to provide ring-back sound code information of the ring-back sound selected by the presenter and subscriber information of the presentee, transmit a message notifying ring-back sound presentation, including call-back information, to a mobile terminal of the presentee in a short message form via a SMS server based upon the subscriber information of the presentee, cause condition information to be selected through the mobile terminal of the presentee based upon the call-back information, and provide the selected condition information to the ring-back sound provision means; and

15 a communication intermediation means provided with an Automatic Response Service (ARS) server for intermediating voice communication between the ring-back sound provision means and a terminal of the presenter and a Web server and WAP server for intermediating data communication between the ring-back sound provision means and the terminal of the presenter.

20 25 13. The apparatus as set forth in claim 12, wherein the ring-back sound provision means is provided with an inactive storage space and an active storage space, stores the provided ring-back sound code information in the inactive storage space of the presentee, remove and store the provided ring-back sound code information to and in the active storage space to be activated, and provide a ring-back tone corresponding to the ring-back sound code information stored in the active storage space.

30 30 14. The apparatus as set forth in claim 13, wherein the ring-back sound provision means is

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provided with the inactive storage space constructed to store plural pieces of ring-back sound information, and overwrites new ring-back sound information on oldest ring-back sound information when the inactive storage space has no available space.

- 5 15. A method of changing ring-back sounds in a subscriber-based ring-back sound service, comprising:

the first step of providing first information about whether to substitute for an existing ring-back tone and second information for performing routing to an ring-back sound provision means, preset in a Home Location Register (HLR) at a time of registering a location of a terminating subscriber, from the HLR to a corresponding terminating MSC;

10 the second step of providing a ring-back sound to a corresponding originator or requesting a trunk call connection from the ring-back sound provision means in response to the provided first and second information when perceiving that an originating MSC requests a call connection to the terminating subscriber, in the terminating MSC;

15 the third step of search for a ring-back sound code preset in connection with a phone number of the terminating subscriber after performing the trunk call connection in response to the request of the trunk call connection, and providing a ring-back sound corresponding to the searched ring-back sound code to the originator via the connected terminating MSC, instead of the ring-back tone, in a ring-back sound provision control means;

20 the fourth step of requesting disconnection of the trunk call connection from the ring-back sound provision means when perceiving that the terminating subscriber answers the call in the terminating MSC, and disconnecting the trunk call connection in response to the request of the trunk call disconnection by the ring-back sound provision means;

25 the fifth step of creating a message, including a special number, a terminating phone number and an originating phone number, based upon information of the special number selected by the originator while trying a phone call and transmitting this message to the HLR, in the originating MSC;

the sixth step of transmitting a message requesting change of a ring-back sound code to the ring-back sound provision control means in response to the received message in the HLR; and

30 the seventh step of substituting the ring-back sound code preset in connection with the terminating phone number for a ring-back sound code preset in connection with the originating phone number in

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response to the message requesting change of a ring-back sound code, in the ring-back sound provision control server.

16. The method as set forth in claim 15, wherein communication between the HLR and
5 the ring-back sound provision control means is performed based upon Internet Protocol.

17. The method as set forth in claim 15, wherein the message created in the originating
MSC and transmitted to the HLR at the fifth step is formed of a feature request Mobile Application
Protocol (Feature Request MAP).

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18. The method as set forth in claim 15, wherein, if the ring-back sound provision control
means comprises a plurality of ring-back sound provision control means, the HLR transmits the
message requesting the change of the ring-back sound code to a first ring-back sound provision
control means corresponding to the originating phone number at the sixth step, and the first ring-back
15 sound provision control means inquires a ring-back sound code corresponding to the terminating
phone number from a second ring-back sound provision control means corresponding to the
terminating phone number and substitutes the ring-back sound code corresponding to the terminating
phone number included in a response to the request for a ring-back sound code corresponding to the
originating phone number.

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19. The method as set forth in claim 15 or 18, wherein communication between the ring-
back sound provision means and the ring-back sound provision control means is performed based
upon Internet Protocol.

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20. A method of changing ring-back sounds in a subscriber-based ring-back sound
service, the subscriber-based ring-back sound service being performed by the step of providing first
information about whether to substitute for an existing ring-back tone and second information for
performing routing to an ring-back sound provision means, preset in a Home Location Register
(HLR) at a time of registering a location of a terminating subscriber, from the HLR to a
30 corresponding terminating MSC; the step of providing a ring-back sound to a corresponding
originator or requesting a trunk call connection from the ring-back sound provision means in

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response to the provided first and second information when perceiving that an originating MSC requests a call connection to the terminating subscriber, in the terminating MSC; the step of search for a ring-back sound code preset in connection with a phone number of the terminating subscriber after performing the trunk call connection in response to the request of the trunk call connection, and
5 providing a ring-back sound corresponding to the searched ring-back sound code to the originator via the connected terminating MSC, instead of the ring-back tone, in a ring-back sound provision control means; and the step of requesting disconnection of the trunk call connection from the ring-back sound provision means when perceiving that the terminating subscriber answers the call in the terminating MSC, and disconnecting the trunk call connection in response to the request of the trunk
10 call disconnection by the ring-back sound provision means; comprising:
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the first step of storing information for performing routing to the ring-back sound provision control means in connection with a phone number of the subscriber, receiving phone number information of a first subscriber and phone number information of a second subscriber through ARS communication with the first subscriber, and transmitting a message requesting change of a ring-back sound code to a first ring-back sound provision control means corresponding to a phone number of the first subscriber, in an ARS server; and
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the second step of inquiring a ring-back sound code corresponding to the phone number of the second subscriber from a second ring-back sound provision control means corresponding to the phone number of the second subscriber according to information for performing routing to the second ring-back sound provision control means, and substituting the ring-back sound code corresponding to the phone number of the second subscriber for a ring-back sound code corresponding to the phone number of the first subscriber.
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21. The method as set forth in claim 20, wherein a mobile terminal of the first subscriber provides a phone number thereof and a phone number with which the mobile terminal recently made a call, to the connected ARS server as the phone number information of the first subscriber and the phone number information of the second subscriber, respectively.
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22. The method as set forth in claim 20, wherein the phone number information of the first subscriber and the phone number information of the second subscriber are input through a mobile terminal of the first subscriber during the ARS communication.
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